

AMENDMENTS TO THE CLAIMS

Please replace all prior versions of claims with the following listing of the claims.

Listing of the claims:

1. **(Currently Amended)** A method for recognizing a change in a rate of data transmission in a communication system which transmits data at a rate which is selected from a plurality of rates, the communication system being capable of conducting several communication sessions simultaneously on a single carrier frequency, comprising:

orthogonally encoding the data in a plurality of packets, each packet having a plurality of symbols having signal points in a field, the signal points of consecutively transmitted symbols being correlated unless the rate is changed, the data being further encoded such that only orthogonal descendants of a selected maximum rate code are used for one of ~~the~~ a plurality of transmitters communicating with a selected receiver, transmitting the encoded data to the selected receiver, and orthogonally decoding the encoded data,

identifying the signal points of consecutively transmitted symbols, and

recognizing a change in the rate of data transmission when the signal points of consecutively transmitted symbols are not correlated.

2. **(Original)** A method for recognizing a change in a rate of data transmission in a communication system which transmits data at a rate which is selected from a plurality

of rates, the communication system being capable of conducting several communication sessions simultaneously on a single carrier frequency, comprising the steps of:

orthogonally encoding the data in a plurality of packets, each packet having a plurality of symbols having signal points in a field, the signal points of consecutively transmitted symbols being correlated unless the rate is changed, the data being further encoded such that only orthogonal descendants of a selected maximum rate code are used for one of the transmitters communicating with a selected receiver,

transmitting the encoded data to the selected receiver, and orthogonally decoding the encoded data,

identifying the signal points of consecutively transmitted symbols, and

recognizing a change in the rate of data transmission when the signal points of consecutively transmitted symbols are not correlated.

3. **(Original)** A signal for use in a data communication system having at least one transmitting station and at least one receiving station, the signal comprising:

a plurality of data packets, each said data packet having a plurality of symbols, a number symbols in each said data packet being selected from one of several numbers of symbols,

each said symbol having signal points in selected positions in a field,

consecutively transmitted signal points being correlated in said field unless said number of signal points in said data packets changes, consecutively transmitted signal

points which are not correlated in said field indicating that said number of signal points in said data packets has changed.

4. **(Currently Amended)** A communication station comprising a receiver, a transmitter and at least one antenna, including:

means for orthogonally decoding data received from another communication station, the data having been encoded in a plurality of packets, each packet having a plurality of ~~symbol~~ signal points in a field, the signal points of consecutively transmitted symbols being correlated unless ~~the~~ a symbol rate is changed, the data having been further encoded such that only orthogonal descendants of a selected maximum rate code are used for communications with the communication station, and

means for identifying the signal points of consecutively transmitted symbols in the decoded data and recognizing a change in the rate of data transmission when the signal points of consecutively transmitted signal points are not correlated.

5. **(Original)** The communication station of claim 4, wherein the receiver decodes the data at a first symbol rate, and when a symbol rate change is recognized, the first symbol rate is increased to a new symbol rate and the data is reprocessed to determine whether the new symbol rate is the current symbol rate of the data.

6. **(Original)** The communication station of claim 5, wherein if it is determined that the new symbol rate is not the current symbol rate of the data, the new symbol rate is

decreased and the data is reprocessed to determine whether the decreased new symbol rate is the current symbol rate of the data.

7. **(Original)** The communication station of claim 4, wherein (a) two consecutive symbols p_t and p_{t+1} are decoded at a first symbol rate when the data is decoded, (b) if both symbols p_t and p_{t+1} are considered valid, both symbols p_t and p_{t+1} are decoded to determine whether they are correlated; (c) if the symbols p_t and p_{t+1} are not correlated, then the first symbol are not correlated, then the first symbol p_t is output and the symbols p_{t+1} and a following symbol p_{t+2} are decoded; and (d) if both symbols p_{t+1} and p_{t+2} are considered valid, designating the symbols p_{t+1} and p_{t+2} as the symbols p_t and p_{t+1} and repeating steps (b), (c) and (d), unless consecutive symbols are correlated.

8. **(Currently Amended)** The communication station of claim 7, wherein (e) if the symbols p_t and p_{t+1} are not correlated, then the first symbol rate q is doubled so that p_t and p_{t+1} are decoded as a single symbol p'_t and a second symbol and p'_{t+1} based on the symbol rate $2q$ is decoded; if both symbols p'_t and p'_{t+1} are valid, then designating the repeating steps (b), (c) and (d).

9. **(Original)** The communication station of claim 7, wherein if the symbol p_{t+1} is considered valid and the symbol p_{t+2} is considered invalid in step (d), then the symbol p_{t+1} is designated p_t and is output, the first symbol rate q is reduced to $q/2$ and a new symbols p'_{t+1} and p'_{t+2} are computed from p_{t+2} , p'_{t+1} and p'_{t+2} are decoded, and processed further depending on whether p'_{t+1} and p'_{t+2} are valid or invalid.

10. **(Original)** The communication station of claim 7, wherein if the symbol p_{t+1} is considered invalid in step (d), then the first symbol rate q is reduced to $q/2$ and p_t is decoded as p'_t and p'_{t+1} , p'_t and p'_{t+1} are checked, and are processed further depending on whether they are valid or invalid.

11. **(Currently Amended)** A communication station comprising a receiver, a transmitter and at least one antenna, including:

a decoder which orthogonally decodes data received from another communication station, the data having been encoded in a plurality of packets, each packet having a plurality of ~~symbol~~signal points in a field, the signal points of consecutively transmitted symbols being correlated unless ~~the~~a symbol rate is changed, the data having been further encoded such that only orthogonal descendants of a selected maximum rate code are used for communications with the communication station, and

a detector which identifies the signal points of consecutively transmitted symbols in the decoded data and recognizes a change in the rate of data transmission when the signal points of consecutively transmitted signal points are not correlated.

12. **(Original)** The communication station of claim 11, wherein the receiver decodes the data at a first symbol rate, and when a symbol rate change is recognized, the first symbol rate is increased to a new symbol rate and the data is reprocessed to determine whether the new symbol rate is the current symbol rate of the data.

13. **(Original)** The communication station of claim 12, wherein if it is determined that the new symbol rate is not the current symbol rate of the data, the new symbol rate is decreased and the data is reprocessed to determine whether the decreased new symbol rate is the current symbol rate of the data.

14. **(Original)** The communication station of claim 11, wherein (a) two consecutive symbols p_t and p_{t+1} are decoded at a first symbol rate when the data is decoded, (b) if both symbols p_t and p_{t+1} are considered valid, both symbols p_t and p_{t+1} are decoded to determine whether they are correlated; (c) if the symbols p_t and p_{t+1} are not correlated, then the first symbol are not correlated, then the first symbol p_t is output and the symbols p_{t+1} and a following symbol p_{t+2} are decoded; and (d) if both symbols p_{t+1} and p_{t+2} are considered valid, designating the symbols p_{t+1} and p_{t+2} as the symbols p_t and p_{t+1} and repeating steps (b), (c) and (d), unless consecutive symbols are correlated.

15. **(Currently Amended)** The communication station of claim 14, wherein (e) if the symbols p_t and p_{t+1} are not correlated, then the first symbol rate q is doubled so that p_t and p_{t+1} are decoded as a single symbol p'_t and a second symbol and p'_{t+1} based on the symbol rate $2q$ is decoded; if both symbols p'_t and p'_{t+1} are valid, then designating the repeating steps (b), (c) and (d).

16. **(Original)** The communication station of claim 14, wherein if the symbol p_{t+1} is considered valid and the symbol p_{t+2} is considered invalid in step (d), then the symbol

p_{t+1} is designated p_t and is output, the first symbol rate q is reduced to $q/2$ and a new symbols p'_{t+1} and p'_{t+2} are computed from p_{t+2} , p'_{t+1} and p'_{t+2} are decoded, and processed further depending on whether p'_{t+1} and p'_{t+2} are valid or invalid.

17. **(Original)** The communication station of claim 14, wherein if the symbol p_{t+1} is considered invalid in step (d), then the first symbol rate q is reduced to $q/2$ and p_t is decoded as p'_t and p'_{t+1} , p'_t and p'_{t+1} are checked, and are processed further depending on whether they are valid or invalid.